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THE DEVELOPMENT OF A PERFORMANCE EVALUATION MODEL FOR DBMS NETW--ETC(U)  
AUG 77 E H SIBLEY, A REITER DAA6 29-76-6-0247

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The field of database management systems (DBMS) is one of the most rapidly ex- panding areas in automated information technology today. One of the major prob- lems faced by the users of DBMS is the decision on what types of problems best suit what classes of systems, and what improvements (or minor reprogramming) could really pay off in terms of better performance for small capital outlay. This proposal seeks to model one particular class of DBMS: the network struc- tured system; this model will aid the user in tuning the overall systems for bet- ter performance, and help the designer of the information systems in making bet-		

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THE DEVELOPMENT OF A PERFORMANCE  
EVALUATION MODEL FOR DBMS NETWORK STRUCTURES

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FINAL REPORT

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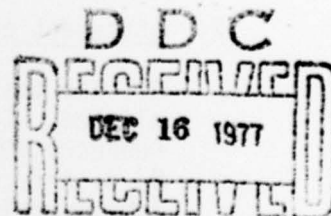
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CONSTRUED AS AN OFFICIAL DEPARTMENT OF THE  
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OTHER AUTHORIZED DOCUMENTS.

## 1. Statement of Problem

The proposal stated that the investigators would design and build a performance evaluation model of data bases management systems (DBMS) which has a network-type data structure. Such a data organization was proposed by the Data Bases Task Group (DBTG) of CODASYL'S Programming Language Committee for inclusion in the COBOL language. Preliminary implementations are or will shortly be available on most large scale and some mini-computers, and it is being investigated by the ANSI/SPARC committee on Data Bases as a possible industry standard. Such a model is useful in estimating the capacity of a proposed system, in evaluating the effects of changes in a hardware configuration, and in experimenting with data structures and scheduling and resource-management algorithms. It is particularly suitable for evaluating a "back-end" computer, i.e. a machine dedicated to data management tasks whose interface (usually to another computer) is via DBTG data manipulation language statements acting as its primitive command structure.

Although the model is general and could be used in a wide class of data base structures, the concepts and programs have been tested by modelling parts of a specific application.

The tasks of the proposed research were as follows:

- Convert and install programs of existing model,
- Write and debug subroutines modelling DBTG data manipulation operations,
- Develop models of application programs,
- Run model for selected configurations, and
- Document system and results.

## 2. Statement of Important Results

All the tasks listed in the above statement of the problem were accomplished. The conversion and installation was principally completed by February 1977, however, the final system was not operational at the U. S. Army Computer Systems Command until 8 August 1977, due to problems experienced in installing the system and the difficulty of arranging travel from Israel.

All subroutines and application program models were developed by April 1977. The running of the models was accomplished between October 1976 and June 1977.

Draft documentation was provided to the Army Computer Systems Command in February 1977, and a final version was supplied in June 1977. A technical report was produced by the authors of this report in July 1977; it is titled "Simulation and Data Administration", and a later version will be submitted for publication in the near future.



### 3. Technical Reports

The following reports are available:

- I. "DIMUI - IDMS Users Manual Version 1.2" by Dr. Allen Reiter, Technion, Israel. Technical Report #101, June 1977, pp 72.
- II. "Simulation and Data Administration" by Dr. A. Reiter and Dr. E. H. Sibley, Dept. of Information Systems Management, University of Maryland. IFSM T.R. No. 22, July 1977, pp 27.

### 4. Personnel

The principal investigator was Dr. E. H. Sibley of the University of Maryland. The special consultant was Dr. A. Reiter of the Technion in Israel. Others supported on this grant included: Dr. Ben Shneiderman, Faculty Associate; Ms. Janet Prochazka, Research Assistant; and Ms. Bonnie Zager, Typist.

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